DENTAL READINESS TRAINING

for

MEDICAL PROVIDERS

- SPEARR, EMEDS, Flight Surgeons Course,
TAOS, TOPSTAR, IDMT Refresher…

USAF Dental Evaluation and Consultation Service

DCOM

59th Dental Squadron

urse Date: 1/07
viewed/Updated: 11/10
piration Date: 11/13

Periodontal conditions

- Gingivitis
- Acute Periodontal Conditions
  - Necrotizing Ulcerating Gingivitis (NUG)
  - Periodontal Abscess
  - Herpetic Stomatitis
  - Recurrent Apthous Ulcers
  - Pericornitis

Gingivitis

- Inflammation of marginal gingiva
  - Swelling and easy bleeding
  - Usually asymptomatic
  - Occurs quickly after interruption of oral hygiene practices
- Untreated, may progress to NUG in susceptible individuals

Gingivitis

- Treatment
  - Improvement of oral hygiene
  - Brush
  - Floss
- Usually resolves in 48–72 hours

N.U.G. Necrotizing Ulcerative Gingivitis

Responsible flora is usually mixed, fuso-spirochetal

- Previously known as Vincent's Infection or "Trench Mouth"
- Signs and symptoms include:
  - Acute pain
  - Foul breath
  - Interproximal gingival necrosis ("punched out papillae")

Necrotizing Ulcerative Gingivitis

- Usually associated with:
  - Poor oral hygiene
  - Situational STRESS
  - Smoking
- NUG is now considered as an oral hallmark of immunosuppression
  - HIV/AIDS
  - Diabetes
  - Malnutrition

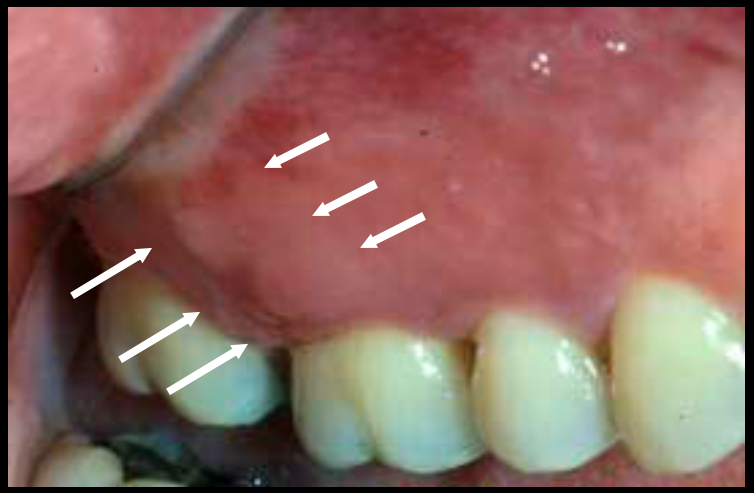
Necrotizing Ulcerative Gingivitis

- Treatment
  - Debridement (at least aggressive toothbrush use)
  - 50/50 mix of viscous lidocaine & mouthwash (if available)
  - Antibiotics ONLY if clinical signs of systemic involvement

Periodontal abscess

- Usually an acute exacerbation of pre-existing gum and periodontal disease
- Involved tooth most likely mobile to palpation
- Swelling and purulence may or may not be evident
- Diagnose by probing and palpation

Periodontal Abscess



- Treatment
  - Establish drainage
    - » Incise & drain
    - » Curettage along the tooth root
    - » or Extract
  - Irrigation
  - Antibiotics if systemic involvement

Pericornitis

- Frequent emergency among 18-25 year olds
- Inflammation/infection of tissues associated with unerupted or partially erupted teeth (wisdom teeth)
- Multiple etiologic factors
  - » Upper erupted tooth impinging on soft tissue
  - » Foreign body reaction and infection

Pericornitis

- May be purely inflammatory, or have varying degrees of frank infection
- Proximity of parapharyngeal spaces is cause for concern
- Trismus of muscles of mastication may limit opening
- Evaluate for systemic involvement (fever, lymphadenitis)

Pericornitis

- Aggressive management is indicated
  - Irrigate infected area with saline or Peridex
  - Initiate antibiotic therapy if systemic involvement or space infection is evident
  - Extract opposing tooth that is occluding on inflamed tissue
  - If symptoms are not resolved by conservative treatment, med-evac for removal of affected teeth

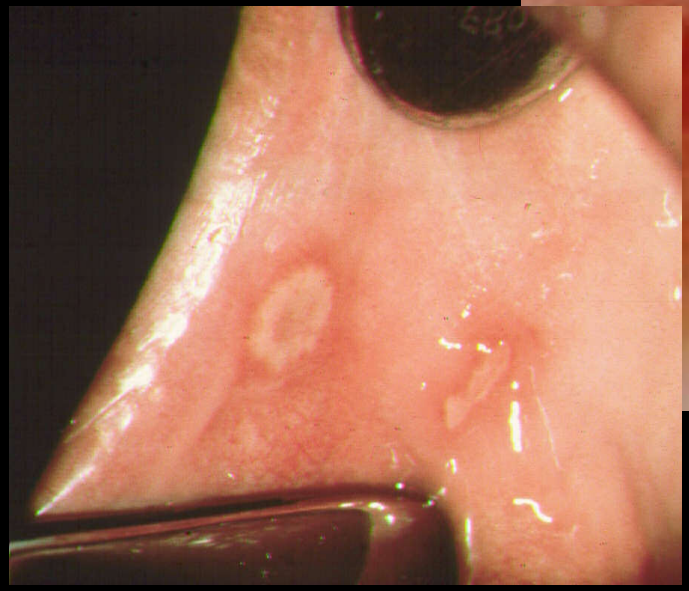
Other causes of oral-facial pain:

other things to keep in mind . . .

- Non-odontogenic causes of orofacial pain which may mimic dental conditions
  - Maxillary sinusitis
  - Sialadenitis
  - Temporomandibular joint pain
  - Angina pectoris (radiating to left posterior mandible)
  - Neuralgia and cluster headaches

Emergent oral pathology

- Apthous ulcers
  - Discrete, shallow ulceration
  - moveable, unattached intra-oral mucosa
  - erythemous halo
  - self-limiting,
  - 7-10 day duration



Aphthous ulcers

- Treatment
  - palliative
  - topical meds

Herpetic gingivostomatitis

- Contiguous vesicles & ulcers
- Herpes labialis
- Diffuse vesicular eruptions on attached (bound down) intra-oral mucosa
- Herpes simplex 1 & 2
- Primary form may have lymphadenopathy, fever,malaise
- Secondary form will usually just manifest as pain & vesicles

Herpetic gingivostomatitis

- Treatment
  - Palliative
  - Pain control
    - » topical anesthetics
    - » NO STEROIDS
  - Maintain hydration & nutrition
- Universal precautions
  - Very contagious
  - Herpetic whitlow

Temporomandibular disorders

- Myofascial pain dysfunction syndrome (MPD)
  - Involves muscles of mastication
  - Situational stress is a contributing factor
  - Clenching and bruxism are associated with MPD
- Temporomandibular joint (TMJ) disorder
  - May involve anterior disc displacement or other pathologic changes in the TMJ
  - Asymptomatic joint noises are not a cause for concern in field and are not always predictive of future problems

TMJ disorders

- Treatment is palliative
  - NSAIDS, muscle relaxants
  - Moist heat to affected muscles
  - Limit opening, un-necessary function
  - Soft diet as much as possible
  - Pain is frequently cyclical and may resolve with or without intervention

Traumatic dental injuries

- Crown fractures
- Tooth Avulsion/Luxation
- Intraoral soft tissue injury

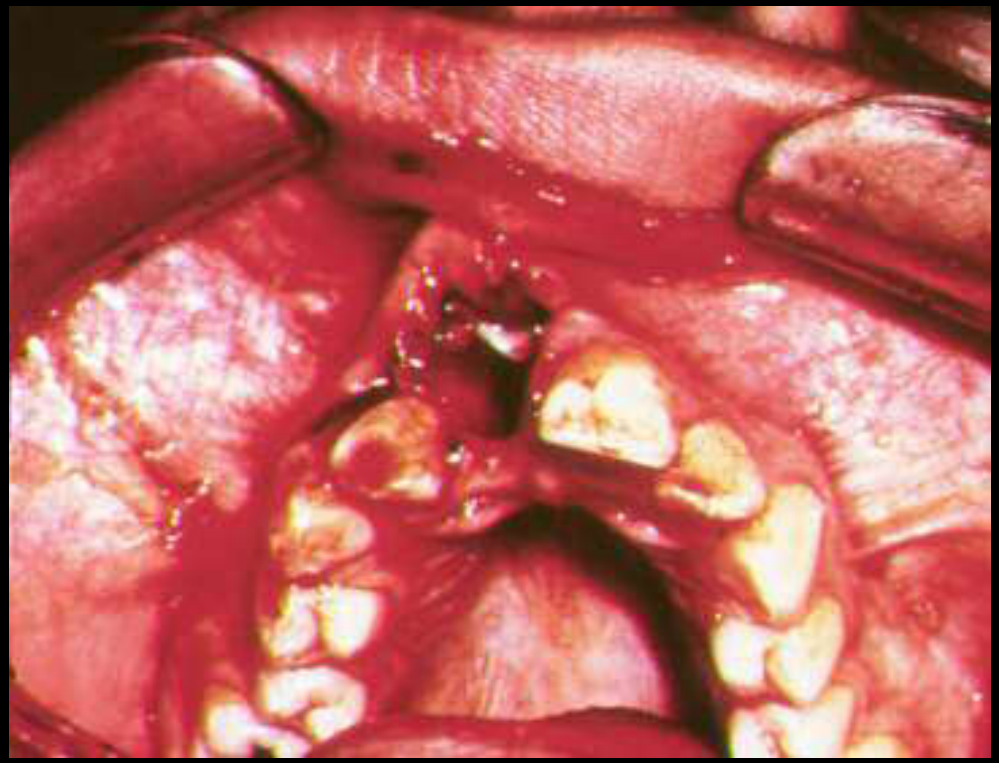
Crown fractures conservative field Tx

- Exposed dentin of tooth may be sensitive
- Dry tooth with cotton
- Observe if tooth is bleeding from the pulp
  - if not bleeding, cover tooth with Fuji IX
  - If bleeding, will need root canal in near future, but restore with Fuji IX for the current time

Crown fracture conservative field Tx

- Mix Fuji IX material and approximate into fractured areas as well as possible
- Rx pain meds and evaluate symptoms
- If signs of irreversible pulpalgia develop, evac for root canal or extraction is indicated

Tooth avulsion



- Usually anterior teeth
- If tooth is not recovered assume ingestion or aspiration (check lung sounds--future X-rays may be indicated)
- Prompt reimplantation critical for good prognosis
  - Rinse with saline or clean water (Do not scrub)
  - Re-implant and stabilize as well as possible
  - Check tetanus immunization

Intraoral soft tissue injuries

- Isolate source of intraoral hemorrhage
- Obtain anesthesia by inflitration or block if needed
- Irrigate and debride, remove foreign debris
- Close mucosa with 3-0 or 4-0 gut or silk
- Cover bone--especially over roots
- For through and through lesions, close intraoral lacerations first

Maxillofacial Trauma

- Preserve the airway
- Control of hemorrhage
- C-Spine stabilization
- Prevent/control shock
- Control of life-threatening injuries
  - head injuries, chest injuries, compound limb fractures, intra-abdominal bleeding
- Extensive vascularity of head & neck can lead to massive blood loss
- Penetrating injuries need to be explored as can be allowed in field situation

Diagnosis of Maxillofacial Injuries

- PALPATION
  - Pain
  - “Step” Defect
  - Crepitus
    - » Bony segments
    - » Subcutaneous emphysema
    - » Mobility

Facial Examination

- Evaluate for laceration
- Obvious depression in skull
- Asymmetry
- Discharge from nose or ear
  - Assume CSF leak
- Palpation to note bone discontinuity
  - Bimanually in systematic manner

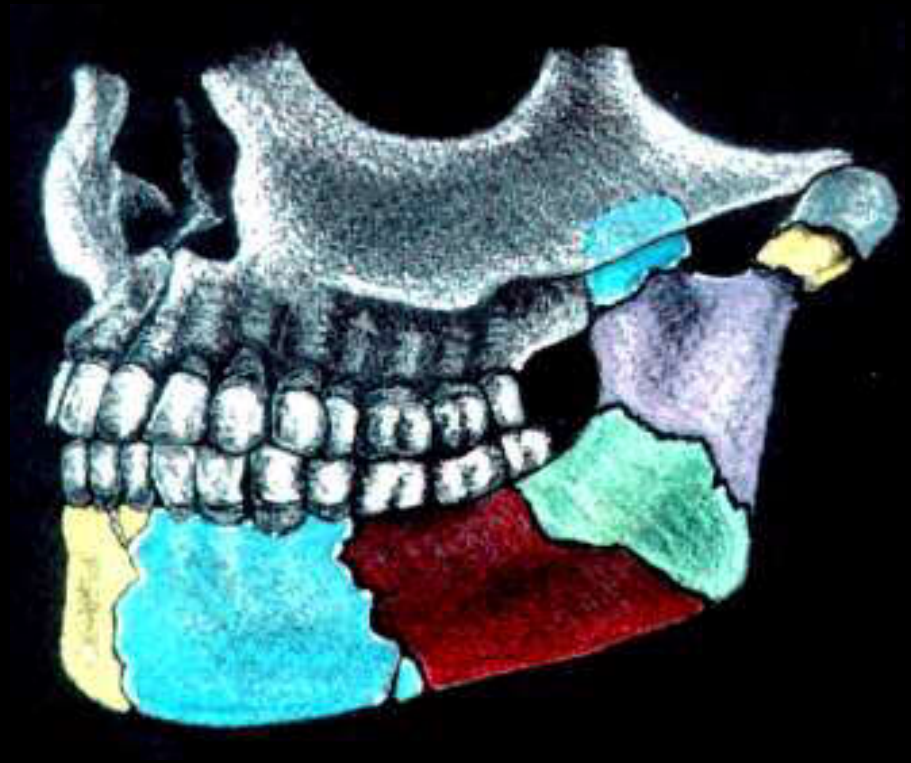
Intraoral Inspection

Sublingual ecchymosis
pathognonomic for mandibular fracture

Step defects, ridge discontinuity, malocclusion

Mandibular Fractures

- Mandible is second most common fractured facial bone
- 50% of mandibular fractures are multiple
  - Examine patient closely and suspect additional fractures

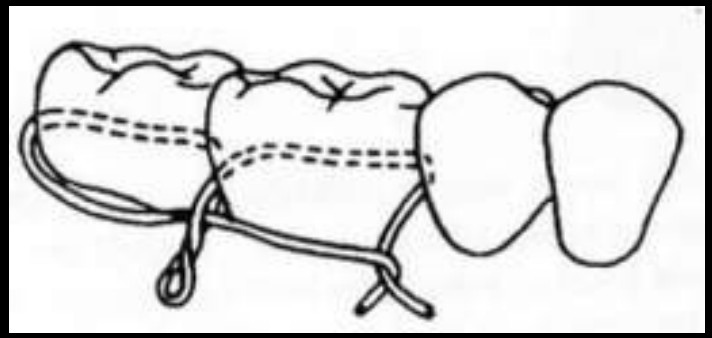


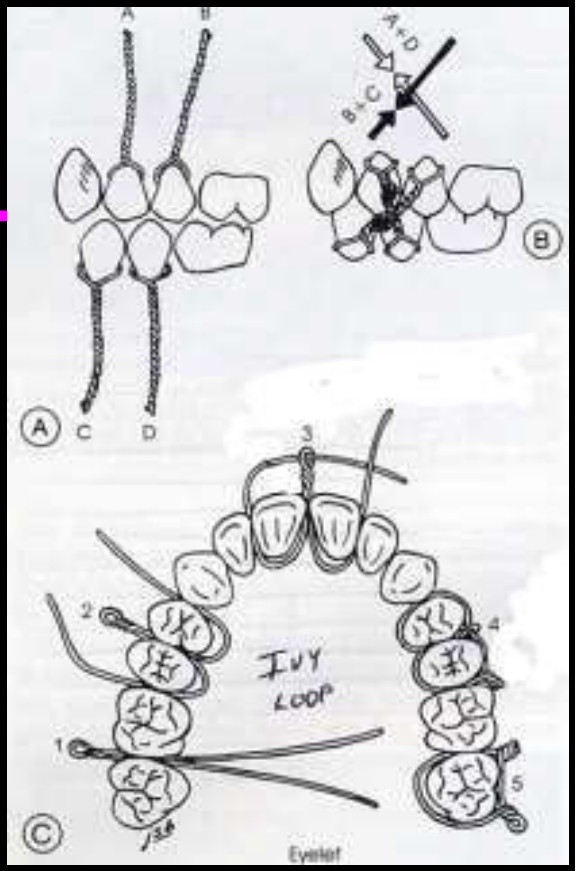
Mandibular Fractures

- Clinical Signs and Symptoms
  - Tenderness & pain
  - Malocclusion
  - Ecchymosis in floor of mouth
  - Mucosal lacerations
  - Step defects inferior border
  - Mandibular branch of Trigeminal Nerve Disturbances

Field Stabilization of Mandibular Fractures

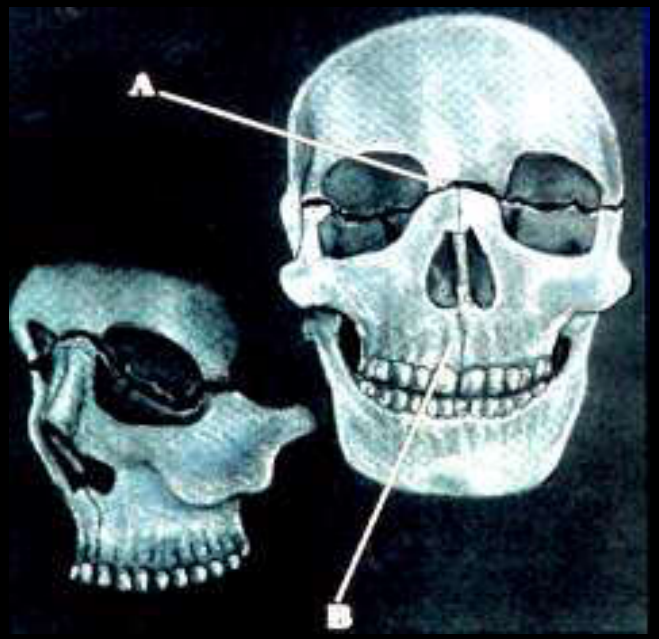
- Wire fixation to reduce mobility
  - Extraoral fixation
  - Arch bars
  - Ivy loops
- Antibiotics
- Fluids and pain management
- Med Evac for definitive treatment
  - if patient stable, can be delayed
- Emergency release
  - Motion sickness secondary to AirEvac



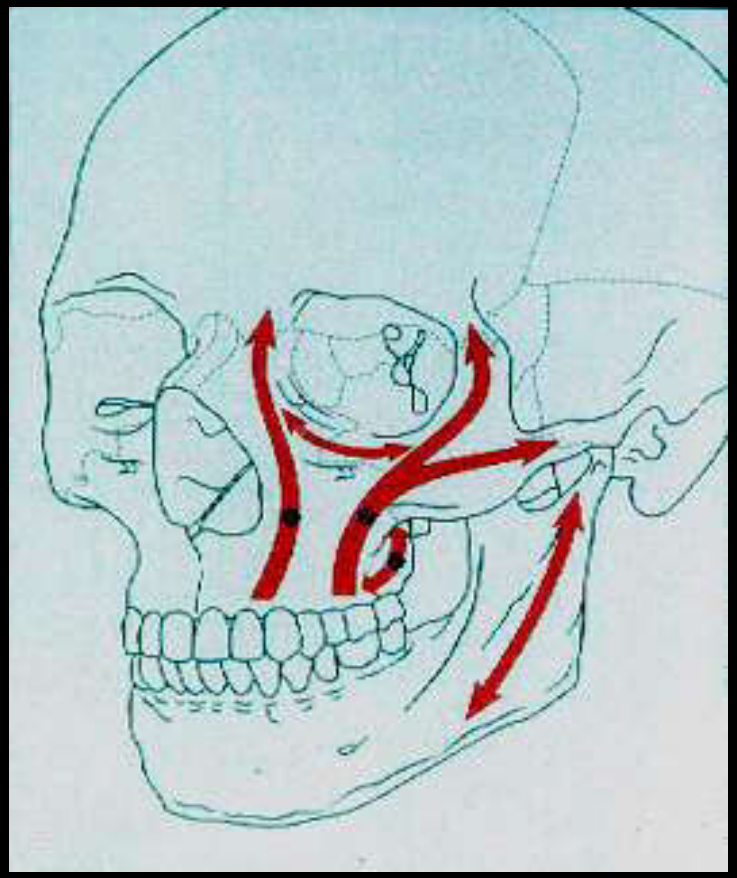


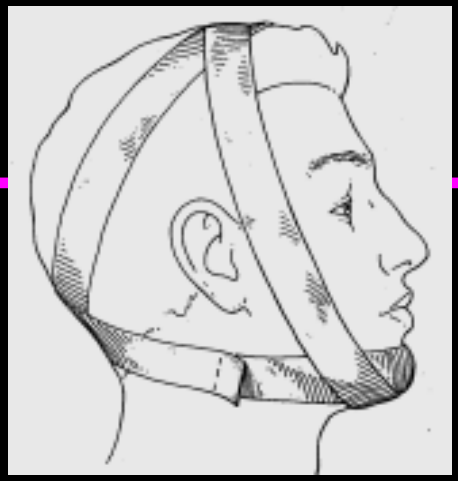
Lefort Classification

- Weakest areas of midfacial complex when assaulted from a frontal direction at different levels (Rene' Lefort, 1901)
  - Lefort I: above the level of teeth
  - Lefort II: at level of nasal bones
  - Lefort III: at orbital level



Field stabilization of Lefort I, II & III





- ABC's
- Fluids & pain management
- Extra-oral stabilization with Barton's bandage if necessary
  - Ensure that airway is not compromised!
- Med Evac for definitive Tx
  - If patient is stable, can be delayed

Antibiotic considerations

- Most odontogenic infections still respond to Penicillin (alpha strep-viridans group)
  - Pen VK 500mg, p.o. q.i.d for 10 days
- If allergic to penicillin:
  - Clindamycin 300mg, p.o. q.i.d. for 10 days
- If unresponsive to penicillin, empirically assume mixed infection:
  - Clindamycin 300mg, p.o. q.i.d. for 10 days

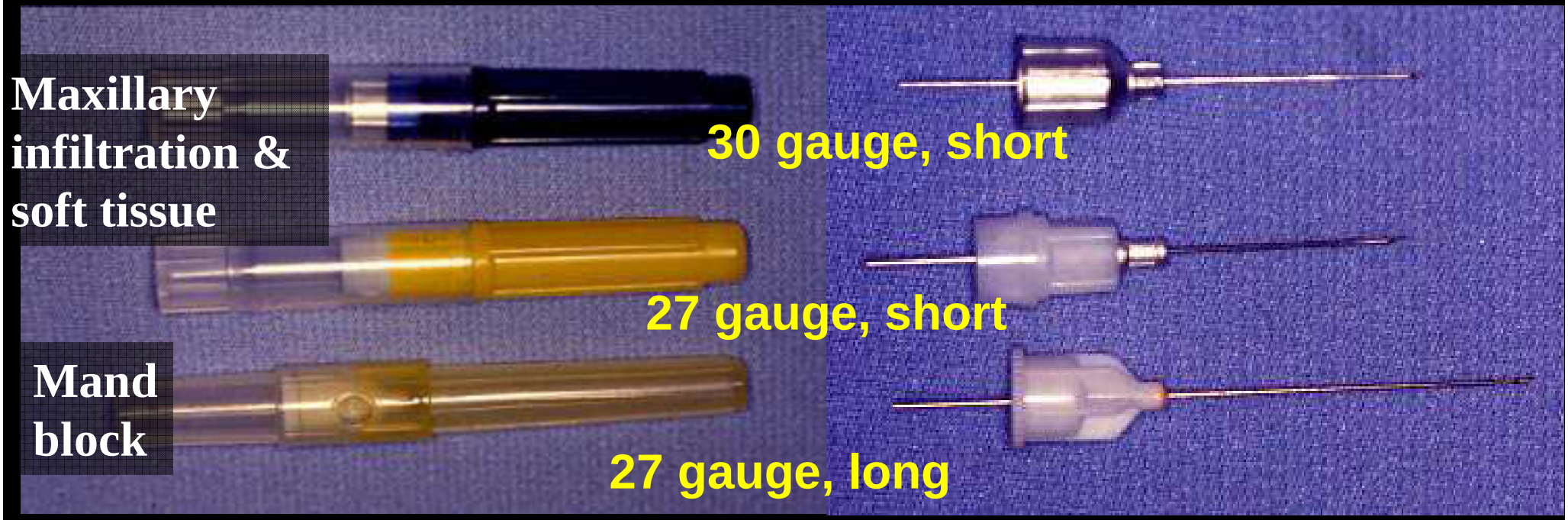
Local anesthesia for dentistry

- Infiltration along 2nd division trigeminal (maxilla)
- Nerve block 3rd division trigeminal (mandible)

Local Anesthesia - armamentarium

- Aspirating Syringe
- 1.8 ml cartridge
- Sterile Disposable Needle
  - Long: 1 5/8 inches
  - Short: 1 inch

Common dental needles



Dental Anesthetic Solutions

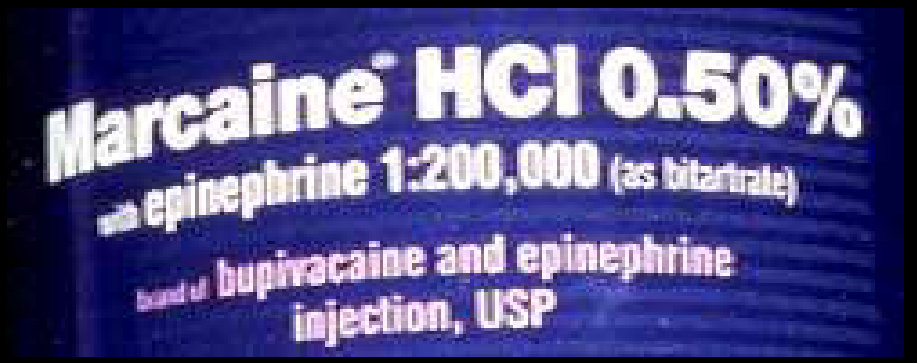
Lidocaine

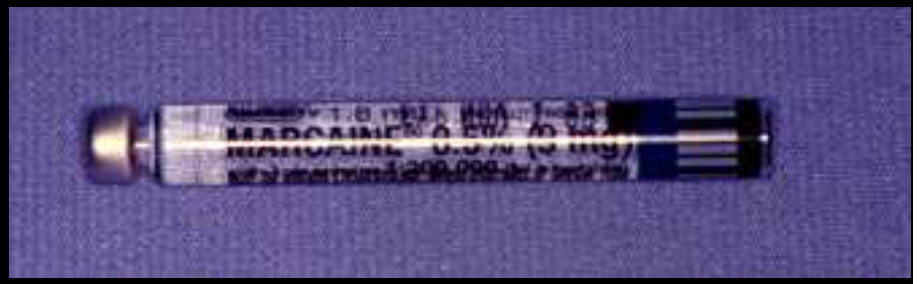
- 1.8ml carpule of 2% Lidocaine
  - » 36 mg lidocaine
  - » .018 mg epinephrine
- 60-90 minutes pulpal anesthesia
- 3-4 hours mucosal anesthesia

Dental Anesthetic Solutions

Marcaine

- 1.8ml 0.5% bupivacaine
- 1:200,000 Epinephrine
- Extended pulpal & mucosal anesthesia
  - » 90-180 min pulpal
  - » 4-9 hours soft tissue





Dental Anesthetic Injections

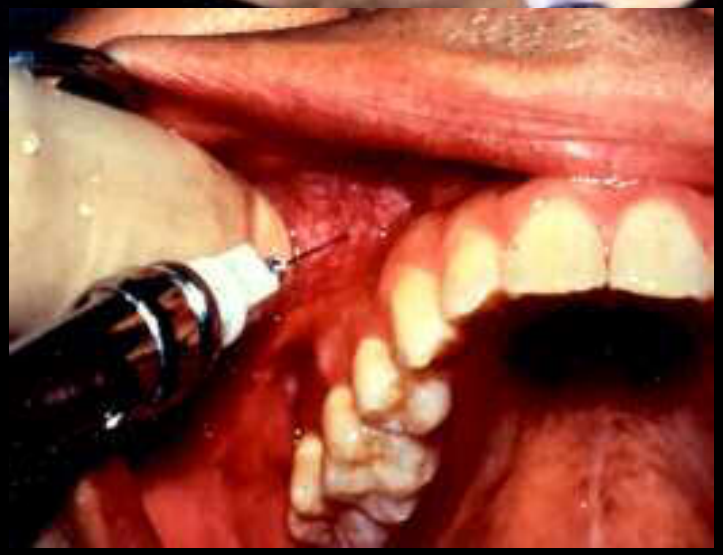
Infiltration

- Injected directly in the area to be anesthetized
- Mechanism is diffusion
- Indicated in porous bone (Maxilla)
- Short 27 or 30 gauge needle
- Onset: 2-3 minutes

Dental Anesthetic Technique

Maxillary Infiltration Injection

- Short needle, 27 or 30 gauge
- Penetrate soft tissue over root apex
- Direct the needle toward bone (45 degrees)
- Contact bone and aspirate
- Inject one-half to three-quarters carpule
- Repeat for each tooth
- Usually WILL NOT anesthetize palatal tissues



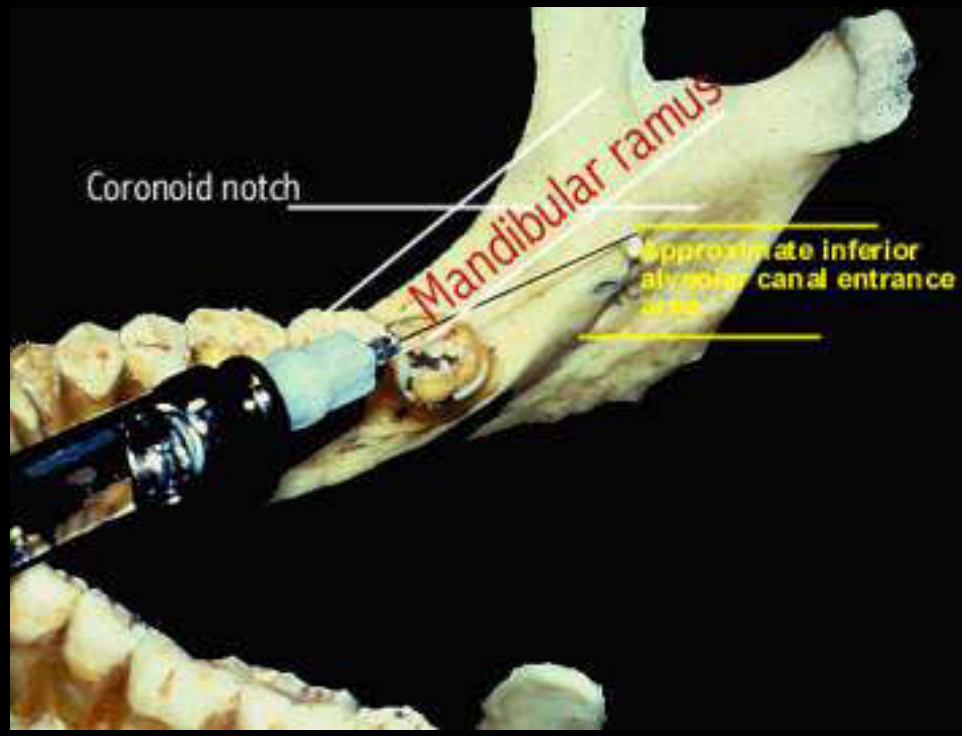
Dental Anesthetic Technique

Maxillary Palatal Tissues

- Locate a point half the distance between the midline and the tooth
- Penetrate to bone
- Aspirate
- Inject no more than one-quarter carpule
- *Be ready,…is a painful injection*

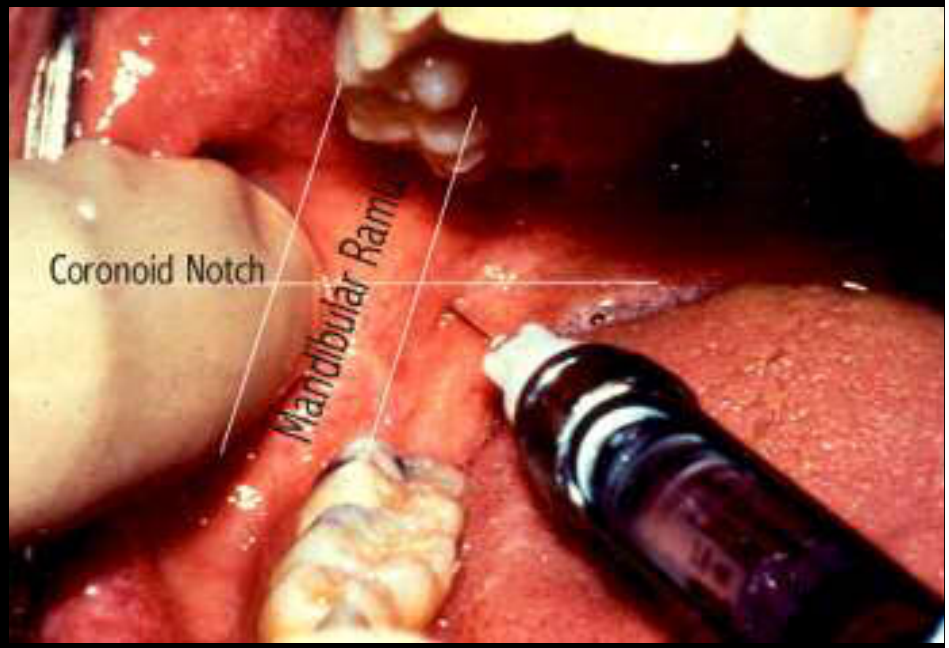
Mandibular Nerve Block

- Inferior Alveolar, Lingual Nerve Block
  - 27 gauge needle, long
  - Parallel to mandibular occlusal plane
  - Palpate (thumb) anterior ramus of mandible (intra-orally) at Coronoid Notch
  - Grasp posterior border of ramus with index finger (extra-orally)
  - Injection approach from contralateral bicuspids



Mandibular Nerve Block

- Inferior Alveolar, Lingual Nerve Block (con't)
  - Contact bone or go 3/4 length of needle
  - Aspirate
  - Deposit 3/4 carpule SLOWLY
  - Withdraw slightly; aspirate; inject remainder (lingual nerve block)
  - Successful block will provide ipsilateral numb tongue & lip to midline



Mandibular Buccal Soft Tissue

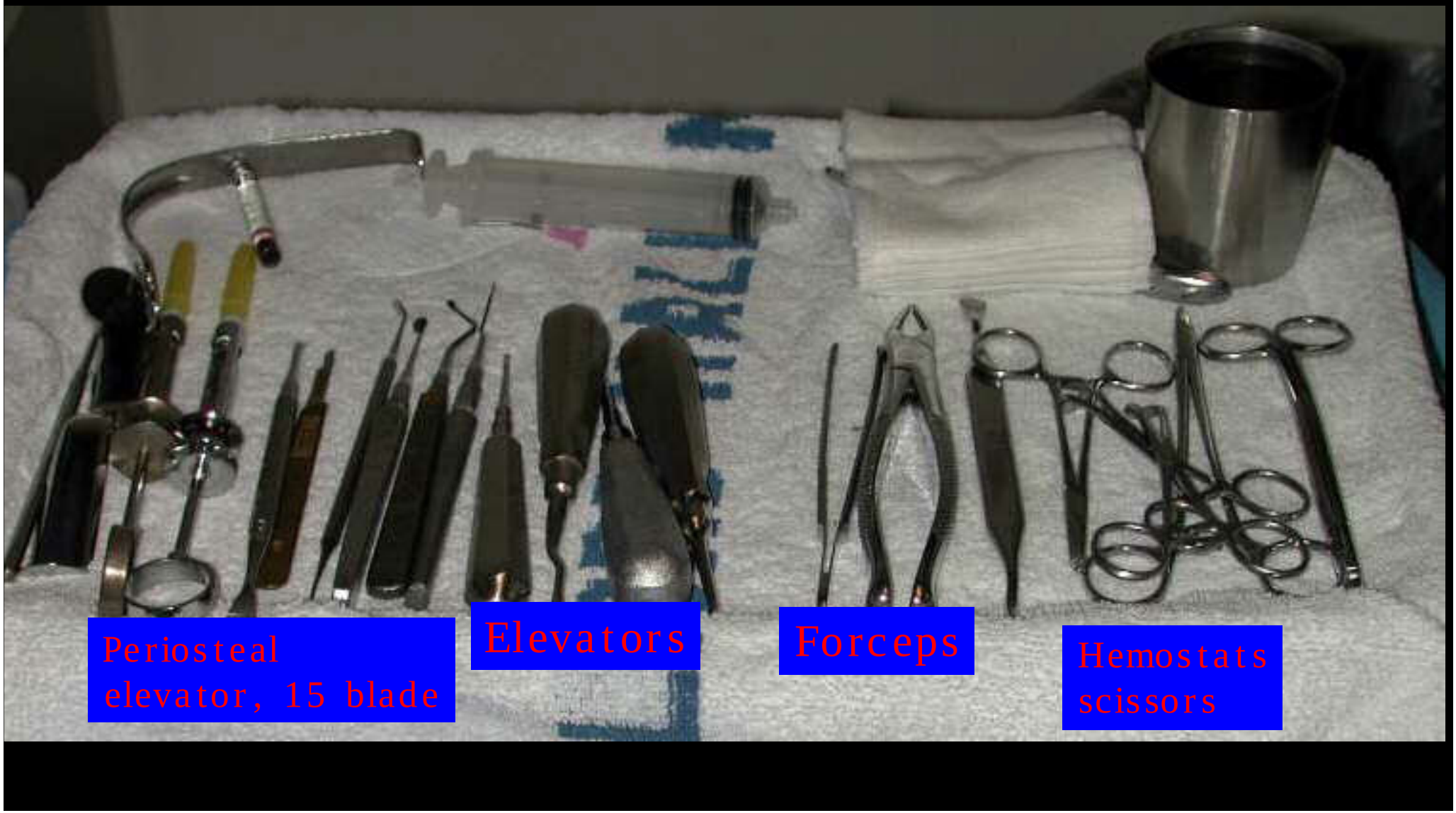
Long buccal nerve anesthesia

- Penetrate mucosa posterior and lateral to the tooth to be treated
- Anterior, medial ramus
- Aspirate
- Deposit no more than 1/4 carpule

Basic exodontia for the field

- For the resolution of problems that cannot wait or not feasible for evacuation
- Mechanical process in which the bone around the teeth is expanded to the point that tooth can be removed

Basic exodontia instruments



Patient positioning

- Head wrapped in sterile towel
- Reclined to supine position
- Position over patients head for direct vision and mechanical advantage to leverage force

Periosteal elevator

- Used to sever gingiva connection to teeth
- Apply force to base of gingival sulcus to crest of bone to sever gingival fibers

Elevation of teeth

- Uses leverage at a mechanical advantage point used to luxate tooth in alveolar socket
- Movement of tooth expands alveolar bone to allow tooth to be removed
- Start with smaller elevator (301) and move to larger (92) as tooth luxates

Elevation of teeth

- Wedge elevator between tooth and bone at neck of tooth and rotate handle with slight twisting, quarter-turn movement
- Observe for tooth movement
- Do not use excessive force
  - » Crown fracture
  - » Loosen adjacent teeth
- As tooth loosens, move elevator more into bone towards root end

Forceps delivery of teeth

- After suitable loosening of tooth with elevators
- Accomplished with forceps designed to grasp roots of teeth
- Continues the alveolar expansion started with elevators
- Delivers the tooth from the alveolus

Forceps

Maxillary (150) Forceps
Handles opposite direction of forceps beaks

Mandibular (151) Forceps
Handles in same direction of forceps beaks

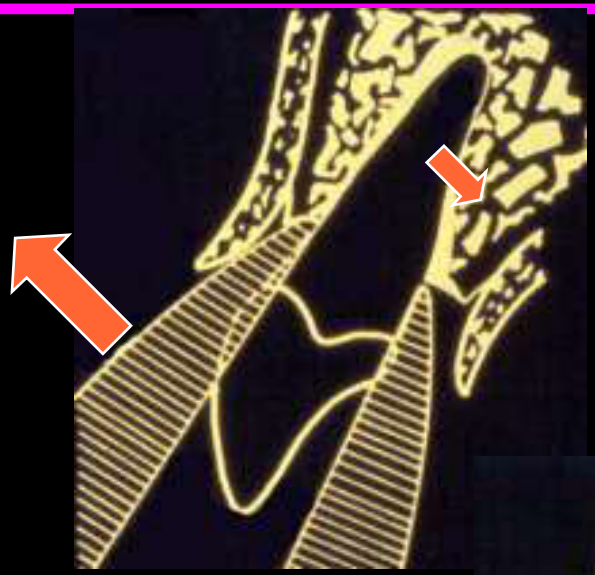
Initial forceps placement

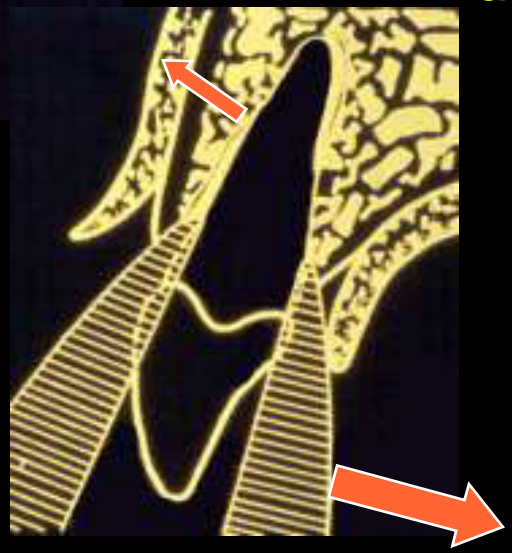
- Seat inside beaks first, then outside
- Seat as far down under gums towards bone as possible
- Seat beaks parallel to long axis of tooth
- Close handles and apply pressure to firmly grip tooth
- Support bone around tooth with other hand

Forceps delivery of tooth

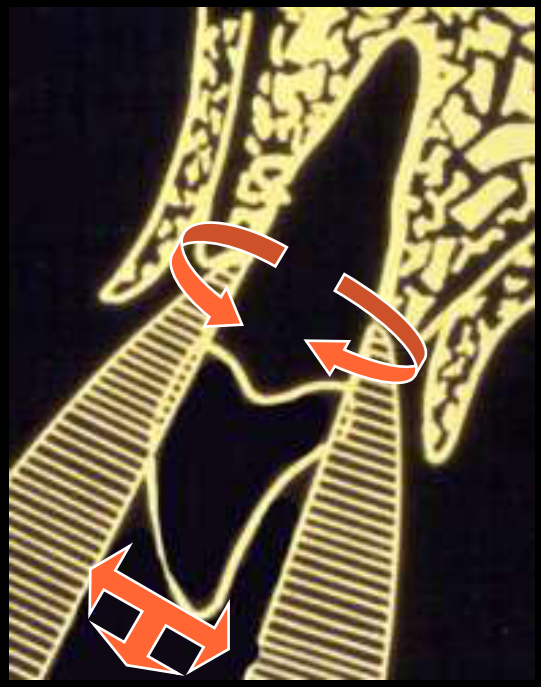
- First pressure directed towards end of root
- Maintain only enough pressure to engage tooth with beaks
- Slow & steady luxation of tooth back and forth
- Expands bone around tooth to the point that tooth can be removed from alveolus
- Technique varies based on location

Anterior tooth technique (most cases)





- Roots of teeth mostly cylindrical
- Luxate first to facial
- Then luxate to lingual
- As tooth loosens, rotate and deliver



Posterior tooth technique (most cases)

- Similar technique as anterior tooth, BUT
- Teeth usually multi-rooted, rotation not possible
- Use predominately facial/lingual rotation to slowly expand alveolar plate before attempting to deliver

After extraction

- Check for root completeness
  - If root is fractured:

    can attempt remove root fragments if observed, otherwise annotate so follow-up can be accomplished
- Irrigate socket with saline
- Evaluate need for suture
- Use finger pressure to compress expanded alveolar bone
- Place slightly moistened gauze over socket and apply pressure

Instructions to patient

- Instructions for pain meds
- Apply pressure to gauze for one hour
- No excessive spitting
- No vigorous rinsing
- No drinking through straw
- Avoid tobacco use

Post extraction complications

- Pain
- Bleeding
- Swelling
- Dry Socket

Post extraction complications

- Pain
  - Reassurance, maintain pain meds
- Swelling
  - Some post op swelling (edema) can be expected due to trauma of surgery
  - Usually resolves 24-36 hours post op
  - Swelling after 36 hours may indicate infection

Post extraction complications

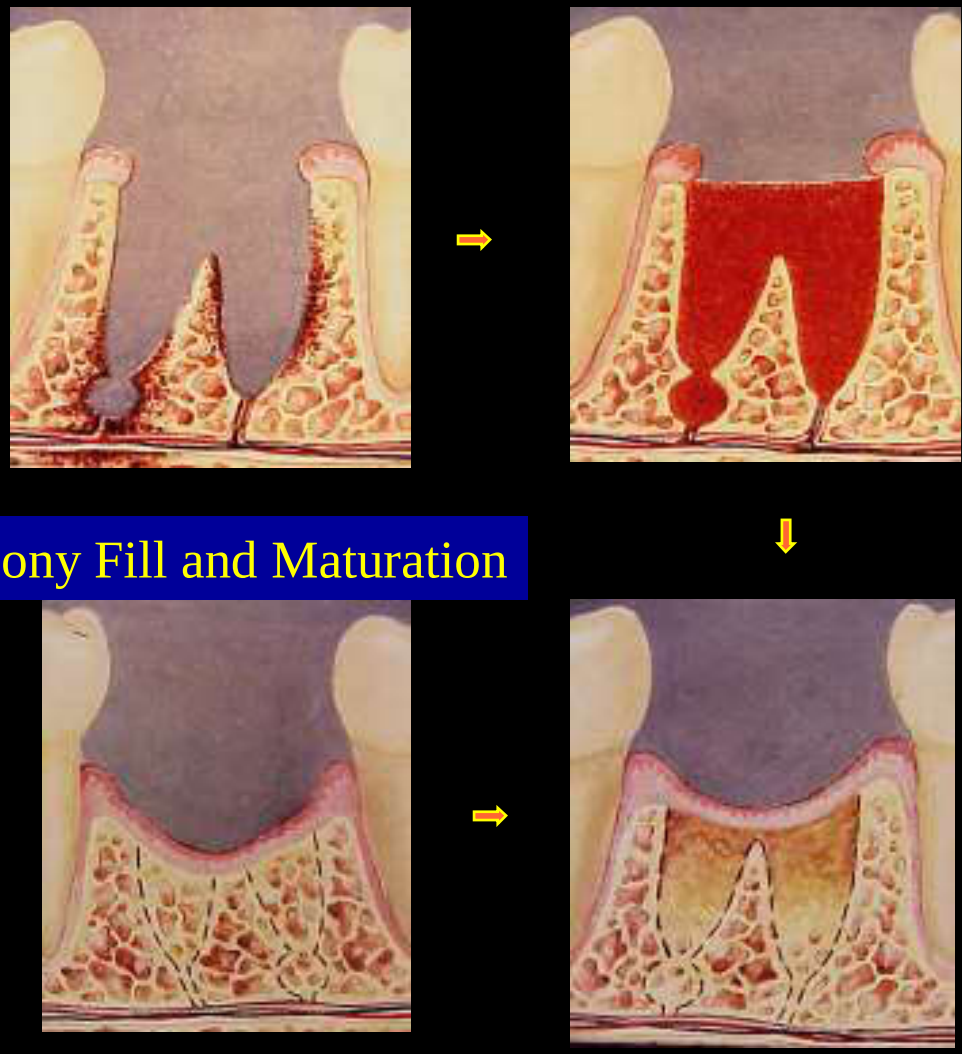
- Bleeding
  - Normal oozing 6-12 hours post op common
  - Maintain pressure with good packing
  - Look for “liver clot”
    - » Remove with suction and apply pressure until hemostasis obtained

Post extraction complications

- Dry Socket
  - due to loss of clot, exposed bone in socket
  - usually mand molars
  - increase in acute, throbbing pain after 48 hrs (2-5 days)
  - pain radiates to ipsilateral ear
  - Analgesics ineffective
  - fetid odor

Post extraction complications

- Dry Socket Treatment
  - Anesthesia
  - Irrigation
  - Pack socket with iodoform gauze + eugenol
  - Pain meds
  - Repeat q 24hrs until symptom-free, and then remove packing



References/Additional Resources

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